INSECTS ASSOCIATED WITH A COLONY OF APHIDS, *BRACHYCAUDUS CARDUI* L., ON SCOTCH THISTLE, *ONOPORDUM ACANTHIUM* L., AT DUNNVILLE, ONTARIO[1]

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ABSTRACT: From July 4 to 14, 1976, insects associated with a colony of the aphid, *Brachycaudus cardui,* on thistle, *Onopordum acanthium,* at Dunnville, Ontario, were collected. They were in Coleoptera (4 families), Diptera (9 families) and Hymenoptera (4 families), including insects known as feeders on honeydew, predators and parasites of aphids and wasps that use aphids to provision their nests.

In an account of the butterflies of Dunn Township, Ontario (Judd, 1963) it was pointed out that the Scotch Thistle, *Onopordum acanthium* L., grows in the township and is visited by butterflies. In the summer of 1976 a plant of this species was found infested with a colony of aphids in the south end of Lot 1, Concession IV of Dunn Township, Haldimand County on the north shore of Lake Erie. Dunn Township has recently been incorporated into the Town of Dunnville. The plant was growing in a ditch. Pressed flowers and leaves are included in the writer's herbarium (No. 805, August 9, 1976).

During June of 1976 a colony of aphids was seen to be developing along the stem of the upper part of the plant and through the first two weeks of July other insects were actively visiting the colony. The aphid, *Brachycaudus cardui* L., originally placed in the genus *Aphis* by Linnaeus, has been included, over the years, in other genera, e.g. *Anuraphis, Prunaphis* (Easthop and Ris Lambers, 1976). It has been reported by Patch (1938) as using several species in various families as food including thistles in the genus *Cirsium* and *Onopordum acanthium* L.

From July 4 to 14, 1976, insects visiting the colony were collected by using an aspirator or an insect net or by clapping between the lid and jar of a cyanide jar. They were identified by the following staff members of the Biosystematics Research Institute, Canada Agriculture, Ottawa: J.M. Campbell *(Bryoporus),* B. Cooper (Calliphoridae), M. Ivanochko (Ichneumonidae, Formicidae), C.C. Loan *(Diplazon),* W.R. Mason (Braconidae), L. Masner (Sphecidae), J.F. McAlpine (Anthomyiidae, Muscidae, Otididae, Tephritidae), J. McNamara (Coleoptera), B.V. Peterson (Chloropidae), W.R. Richards *(Brachycaudus cardui),* J.R. Vockeroth (Ceratopogonidae, Dolichopodidae, Scatophagidae, Syrphidae). All specimens are deposited in the collection of the Department of Zoology, University of Western Ontario except one, *Bracon tenuiceps,* kept in the National Collection, Ottawa.

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Aphids produce the sweet-tasting exudate "honeydew" from the digestive tract. It has frequently been observed that other insects are attracted to this material and use it as food and that the aphids themselves are preyed upon and parasitized by other insects. These features of aphid biology have been summarized by Dixon (1973).

ACCOUNT OF INSECTS COLLECTED

Coleoptera

Cantharidae

Podabrus rugulosus Lec. – 15 beetles, July 5 – 14.
Podabrus tomentosus Say – 6 beetles, July 4 – 6.

Beetles of the genus *Podabrus* were previously found in Dunn Township feeding in galls of *Phylloxera caryaecollis* Fitch (Judd, 1966) and on flowers of dogwood (Judd, 1975).

Lampyridae

Pyropyga decipiens Har. – 11 beetles, July 4 – 7.

Dillon and Dillon (1961) point out that beetles of this family are predaceous in both adult and larval stages, feeding on other insects.

Staphylinidae

Bryoporus sp. – 1 beetle, July 5. Blatchley (1910) includes two species in this genus, one known to occur beneath bark and rubbish.

Coccinellidae

Coccinella transversoguttata richardsoni Brown – 17 beetles, July 4 – 13.
Coccinella novemnotata Hbst. – 1 beetle, July 4.
Coccinella undecimpunctata L. – 1 beetle, July 11.
Adalia bipunctata L. – 1 beetle, July 4.
Hippodamia convergens Guer. – 16 beetles, July 4 – 13.
Hippodamia tredecimpunctata tibialis (Say) – 1 beetle, July 4.
Brachyacantha ursina F. – 11 beetles, July 4 – 13.

Lady beetles are among the most important predators on aphids (Dixon, 1973). Hodek (1973) points out that 85 percent of the prey of beetles in Coccinellinae are aphids. Of the seven species found at the colony of *B. cardui,* two were found previously at wild carrot in Dunn Township (Judd, 1970), one on dogwood (Judd, 1975) and one, *Hippodamia convergens,* was the commonest beetle in drift on the beach of Lake Erie (Judd, 1974). Four of the species are predators of aphids on peach trees in the Niagara Peninsula between Lake Erie and Lake Ontario (Putnam, 1964).

Diptera

Ceratopogonidae

Forcipomyia sp. – 1 fly, July 4. Some species in this family prey on small insects

(Curran, 1934).

Dolichopodidae

Condylostylus sp. – 1 female, July 4. Adults in this family are predaceous, feeding on smaller insects (Curran, 1934).

Syrphidae

Sphaerophoria sp. – 1 female, July 7. Larvae of several species of hover flies are predators of aphids (Curran, 1934; Dixon, 1973). The subfamily Syrphinae, which includes *Sphaerophoria,* shares with coccinellid beetles the role of the most important predators of plant lice (Stone *et al.*, 1965).

Otitidae

Herina canadensis (Johnson) – 1 fly, July 5. Most insects in this family are saprophagic, while a few feed on living plant tissue (Stone *et al.*, 1965).

Tephritidae

Orellia ruficauda (Fab.) – 1 fly, July 8. This fly is widely distributed in North America (Stone *et al.*, 1965).

Chloropidae

Oscinella sp. – 1 fly, July 4. Flies of this genus have been reported from dogwood in Dunn Township (Judd, 1975).

Anthomyiidae

Scatophaga stercoraria (L.) – 1 female, July 7.
Hylemya platura (Meigen) – 9 males, 1 female, July 4 – 14.
Hylemya fugax (Meigen) – 1 male, July 4.
Hylemya sp. – 10 females, July 4 – 14.
Egle sp. – 1 male, July 14.

Larvae of this family for the most part feed in plant tissue and organic waste (Stone *et al.*, 1965). It is likely that they were at the colony of aphids as feeders on honeydew.

Calliphoridae

Bufolucilia silvarum (Mg.) – 3 flies, July 4 – 8.
Lucilia illustris (Mg.) – 1 fly, July 4.

These flies have been recorded in Dunn Township on milkweed (Judd, 1968), wild carrot (Judd, 1970) and dogwood (Judd, 1975). They are habitual visitors at flowers and were probably attracted to the honeydew produced by the aphids on thistle.

Muscidae

Musca domestica L. – 1 fly, July 4. The house fly habitually feeds on sugary fluids and thus was probably attracted to the honeydew produced by the aphids.

Hymenoptera

Braconidae

Bracon tenuiceps (Muesebeck) – 1 wasp, July 4. This wasp is parasitic on a weevil (Muesebeck *et al.*, 1951).

Ichneumonidae

Pycnocryptus director (Thbg.) – 3 wasps, July 4. Most of the wasps in the tribe Mesostenini, to which *P. director* belongs, are parasitic on pupae or larvae concealed in tunnels or leaf rolls (Muesebeck *et al.*, 1951).
Cratichneumon ritus Heinrich – 1 wasp, July 4. *C. ritus* has been recorded from Ontario by Heinrich (1961) who reports that known hosts for wasps in *Crathichneumon* are caterpillars of moths.
Diplazon laetatorius Fabr. – 14 wasps, July 4 – 14. This wasp is parasitic on larvae of Syrphidae (Muesebeck *et al.*, 1951). The wasps found at the colony of aphids were thus doubtless parasitizing syrphid larvae predaceous on the aphids.

Formicidae

Formica glacialis Uhler – 23 ants, July 4 – 7. This ant is widely distributed in North America (Muesebeck *et al.*, 1951). During the two-week period when the aphid colony was observed, the worker ants were the most common insects clustering about the aphids. The food of ants in the genus *Formica* is largely honeydew (Muesebeck *et al.*, 1951).

Sphecidae

Pemphredon inornatus Say – 3 wasps, July 4 – 7.
Passaloecus singularis Dahlbom – 3 wasps, July 4.
Passaloecus sp. – 1 wasp, July 4.

Wasps in these two genera nest in burrows and provision them with aphids (Muesebeck *et al.*, 1951). The wasps at the aphid colony were thus doubtless gathering prey to provision their nests.

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